SOCIETAL LIFE CYCLE ASSESSMENT

Impact assessment in SLCA: sorting the sLCIA methods according to their outcomes

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Abstract

Background, aims, and scope Social Life Cycle Assessment (SLCA) is a tool assessing the social aspects of products and services. This article is a step forward from the Guidelines and wishes to clarify the different impact assessment (IA) methods covered in the Guidelines and how these different methods would provide different types of information regarding the social aspects of the product system.

Methods The outcomes resulting from different sLCIA methods are discussed through the analysis of three methods covered by the Guidelines for SLCA (UNEP 2009): the Taskforce's method, Hunkeler's (2006) and Weidema's (2006). In order to highlight the different outcomes, we analyze the "nature" of the indicator results, the sources of the stressors, and the way the IA results are linked to the product system.

Results Different results are provided depending on the sLCIA approach used. We stress that the use of impact pathways allows the assessment of social impacts. The Taskforce's method, which compares the state of the dimensions of the social context of the product system with international consensus, assesses "social perform-

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ances." Regarding the sources of the stressors, the analysis needs to look at other levels than the unit process to capture the social issues. Finally, two approaches are used to connect the indicator results to the product system: one carrying the quantitative link between the inventory indicator and the functional unit all the way to the IA result through impact pathways, and the other, weighting the IA results according to the relative importance of an activity variable.

Discussion The different features of the sLCIA methods result in different outcomes. Depending on the sources of the stressors, different levels are assessed. When the stressors are collected at an organizational level, e.g., country, sector, or enterprise, the unit assessed becomes the social context, which can be called "context units" parallel to the unit processes. SLCIA methods will also provide different outcomes depending on the characterization models used in the analysis: social impacts versus social performances. Finally, the difference between the outcomes according to the approaches used to link the IA results to the product system will require further reflections.

Conclusions Two types of sLCIA are covered by the Guidelines. One uses Performance Reference Points allowing the evaluation of the relative position of the state of a dimension of a context unit in reference to an international consensus. The second one, closer to LCA, assesses the social impacts derived from the technical nature of the processes, through the use of impact pathways.

Recommendations and perspectives Choosing between the feasibility of deriving social impacts from social variables through impact pathways or assessing a broader set of social issues through the use of semiquantitative indicators is an ongoing issue and requires further research. Currently, the choice of sLCIA methods is informed by the availability of the characterization models and the indicators.

1 Introduction

Social Life Cycle Assessment (SLCA) has evolved tremendously in the last year, with the publication of the Guidelines for SLCA for products and services, in May 2009—referred herein simply as *Guidelines* (UNEP 2009). These Guidelines are the second milestone achieved by the UNEP/SETAC Life Cycle Initiative's Taskforce on the integration of social aspects into life cycle assessment (LCA). This group first published a feasibility study, in 2006, concluding on the feasibility of conducting the assessment of social aspects into the LCA framework (Griesshammer et al. 2006). The next step was to develop a set of guidelines adapted for social and socioeconomic aspects.

These Guidelines ground the assessment of the social and socioeconomic aspects—referred simply as social aspects—into the LCA framework. The proposed framework is "in line with the ISO 14040 and 14044 standards for Life Cycle Assessment (UNEP 2009; 5)" but adapted for the social aspects. The Guidelines are calling for further research in order to move from a general perspective to an operational set of tools (UNEP 2009). As coauthors of the Guidelines, we want to contribute to this reflection, especially on the research axe covering the impact assessment (IA) phase, highlighted as being an important field in the Guidelines (UNEP 2009).

The IA phase described in the Guidelines is based on the works of various authors and, consequently, various approaches. These heterogeneous contributions offered a broad spectrum varying from partial elements of the IA phase to IA methods already integrated into SLCA[1]. Consequently, the description of the methodology for the IA phase in the Guidelines is broad, allowing different Social Life Cycle Impact Assessment (sLCIA) methods to be used; at least, the methods used to build the framework. As it is not the objective of the Guidelines to present specific methods, it may not always be straightforward to associate the methodological elements[2] with the sLCIA corresponding methods. Indeed, instead of being presented distinctly, these methods are presented partially and sometimes implicitly to explain the different steps of the

IA phase. However, we believe that these different sLCIA approaches present fundamental differences with respect to their design and, consequently, to their outcomes. It is important to highlight these fundamental differences in order to allow the development of the methods according to the outcomes desired. This article aims to fill this gap through two main objectives: (1) clarifying the different sLCIA methods covered in the Guidelines and (2) analyzing their specific outcomes. As the article intends to enrich and move forward with the Guidelines, the reader might have a better understanding of the discussion if familiar with the Guidelines

We will base our analysis on three sLCIA methods: Hunkeler (2006), Weidema (2006), and the Taskforce[3], which are referred in the Guidelines, some, implicitly: "Some sLCIA methods have been developed to provide estimates of social impacts directly at the unit process activity (i.e., Hunkeler 2006). Others provide estimates of how unit processes can lead to potential human health consequences through socio-economic pathways (i.e., Weidema 2006). And more generally, several proposed and demonstrated sLCIA methods provide summaries and interpretations of the social significance of the data collected at the Inventory phase [which we call here the Taskforce method]" (UNEP 2009: 69). By making explicit the contribution of these three different methods to the Guidelines, we believe enriching the comprehensibility of the framework. To fulfill the second objective, we will focus on the "nature" of the indicator results of the different sLCIA methods, the sources of the stressors that the different IA methods assess, and the way the IA results are linked to the product system. But first, we will present an overview of SLCA as explained in the Guidelines.

2 What is SLCA

The Guidelines define SLCA as a "technique that aims to assess the social and socio-economic aspects of product and their potential positive and negative impacts along their life cycle" (UNEP 2009; 37). The methodological framework provided in the Guidelines closely follows the LCA methodology, as described in ISO 14044 (2006). Particular attention has been paid to allow, as much as possible, the integration of the social aspects into the existing framework of LCA. Thus, SLCA follows the same four main iterative steps as those used in LCA. These are:

1. Definition of the goal and scope
2. Life cycle inventory analysis

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[1] An example of this could be the embryonic impact pathways of Weidema (2006), which are "elements of an IA phase," and the IA method of Hunkeler (2006), which could be operationalized into a SLCA.

[2] i.e., impact pathways, "performance reference points," etc.

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[3] The Taskforce's method represents ideas that were put forwards within the Taskforce and accepted by the group.

3. Impact assessment
4. Interpretation

The general framework explained in the Guidelines (UNEP 2009) is briefly described here with a focus on the IA phase. A brief description of the goal and scope as well as the Life Cycle Inventory will also be presented here to emphasize the main similarities and differences with respect to LCA. However, there will not be any discussion on the interpretation phase except to mention that this phase is responsible for verifying the robustness of the study and for drawing conclusions necessary for supporting decision-making.

The goal of the study in SLCA must be clearly specified since the question asked will influence the design of the method, as in LCA. Following the goal and scope, the product system is defined. The processes involved in the life cycle of the product can be identified using process databases or Input–Output models, which identify the economic activities necessary for supplying the product function. The social stressors[4]—equivalent to the elementary flows in LCA—are location-dependent in SLCA (UNEP 2009; Hunkeler 2006). What those social stressors "mean" in the social context can also be location-dependent so would be the characterization models (UNEP 2009). The geographic location of processes or sectors must be known in order to understand the social burdens of the product system; a consideration that is gaining importance in the LCA world as well (see Aissani 2008).

The Inventory phase consists of the collection of data, which will allow the assessment of the social impacts of the product's life cycle. Depending on the goal of the study, generic or case-specific data may be used. The Guidelines (UNEP 2009) specify three different types of data that can be used in a SLCA: (1) the activity variable, which serves to allocate a socially relevant weight to the different unit processes when dealing with qualitative and semiquantitative indicators that cannot be referred to the functional unit directly; (2) the data related to the social conditions or stressors that will be translated into impacts (the inventory data); and (3) the data necessary to compare the local situation to an international set of thresholds (the "Performance Reference Points" to be used in the characterization models). Because the assessment of the social impacts is mostly site-dependent, the aggregation of the inventory data may not take place, at least in its entirety, during the inventory phase of the SLCA. The evaluation of the impact

is site-specific. Consequently, this second phase is primarily limited to the collection of data.

The impact assessment phase is similar to LCA in the sense that indicators are used to represent the impacts for the different impact categories using the data collected at the inventory phase. As for LCA, the impacts of the product's life cycle are those created at the unit processes required for the product to provide its function. The social impacts of a product itself (e.g., the impacts of cell phone on the society) are not well addressed by the existing SLCA methods and the Guidelines stress the need for research in this field (UNEP 2009).

The sLCIA methods differ in the approach they use to evaluate the social burdens of the product system. The following subsections sort out the different sLCIA methods covered in the Guidelines.

2.1 Sorting out the social life cycle impact assessment approaches in the Guidelines

The sLCIA approaches are understood here as the types of characterization models. The Guidelines propose the use of impact pathways and of Performance Reference Points, which could be associated to the Types 1 and 2 impact categories in the Guidelines. Indeed, the Guidelines propose a distinction between "Type 1" and "Type 2" impact categories. Impact categories are described as "logical groupings of S-LCA results, related to social issues of interest to stakeholders and decision makers" (UNEP 2009: 99), e.g., the working conditions that could affect the workers. However, we suggest that the fundamental difference is not the impact categories as such but the sLCIA methods. This is implicitly proposed in the Guidelines when it states that "Type 1 impact categories aggregate the results for the subcategories within a theme […] Type 2 impact categories model the results for the subcategories that have a causal relationship (UNEP 2009: 71)." This statement suggests that the Types 1 and 2 impact categories are assessed using different evaluation systems: the characterization models. Furthermore, some impact categories could be assessed using both Types 1 and 2 sLCIA methods, as this could be the case for health which is listed as an impact category covered by Type 1 as well as Type 2 (UNEP 2009). Therefore, the core difference lies in the characterization models and not in the impact categories.

Derived from the quotation above, Type 1 are the impact categories that are assessed using aggregation formulas as characterization models. This may refer to the aggregation of semiquantitative and quantitative indicators using scoring and weighting systems derived from "Performance Reference Points," which will be described in the next subsection. Type 2 uses impact pathways as characteriza-

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[4] We use "stressor" to qualify the element of pressure, the elementary flow and the inventory indicator according to the implicit utilization by (Jorgensen et al. 2008): "However, connecting the stressors that create the impacts and the Areas of Protection requires that the impact pathway is established. […] Because midpoint indicators are closer to the stressors and also more understandable for decision makers […]"

tion models, passing through midpoint indicators and, potentially, endpoints.

2.1.1 Type 1 Social Life Cycle Impact Assessment

The Type 1 sLCIA does not make use of causal–effect chains mainly because "cause–effect relationships are not simple enough or not known with enough precision to allow quantitative cause-effect modeling" (UNEP 2009: 70). It is proposed to use "performance reference points," which means "making use of additional information, such as internationally accepted levels of minimum performance, to help understand the magnitude and the significance of the data collected in the inventory phase" (UNEP 2009: 69), The Performance Reference Points "may be internationally set thresholds, goals or objectives according to conventions and best practices, etc." (UNEP 2009: 99). For example, the subcategory "Fair Salary," proposed in the Guidelines, could be assessed through semiquantitative indicators such as: 1 if the total workforce of the firm paid the minimum payment is below 5%, 0 otherwise. In this example, the Performance Reference Points would be 5% and "the minimum payment" which represent thresholds used in the Index for the *Economically Equitable Enterprise* of Standing (2003) from the International Labour Organization. Here, 1 and 0 are the scoring system allowing a descriptive indicator to be translated into a semiquantitative value. The semiquantitative form allows the aggregation, using a weighting system, resulting in a Subcategory indicator or index. It is important to note that the use of Performance Reference Points allows the evaluation of the *position* of the unit process assessed *relative* to the performance expected from an international convention, a Social Responsibility best practice guideline or even when compared to other countries (Parent 2009). The Guidelines use the expression "meaning assessment" to define the use of a scoring system, based on Performance Reference Points, and a weighting system to aggregate the indicators results.

If the modeling, which translates the Inventory data into indicator results, differs significantly from the LCA approach, the Guidelines propose to keep the wording "characterization models." The use of Performance Reference Points as sLCIA approaches has been mainly developed into the Taskforce; therefore, the appellation "Taskforce approach" is used in this article.

2.1.2 Type 2 Social Life Cycle Impact Assessment

The Type 2 sLCIA uses characterization models that seek to represent the impact pathways, as in LCA. Characterization models based on impact pathways imply that the descriptions are mostly quantitative and represent causal–effect chains. Hunkeler (2006) and Weidema (2006) have outlined two examples of sLCIA using impact pathways.

Hunkeler (2006), with his "Societal Life Cycle Assessment," proposes a generic assessment of the benefits (in terms of wealth) that can be attributed to the processes involved in the product life cycle (related to the hours of labor per output). His method uses the hours of labor required for each unit process and, using causal–effect relationships, translates it into the capacity of the employees to access housing, health care, education, and necessities.

Weidema (2006) defends the feasibility of describing impact pathways linking quantitative inventory items, such as child labor, to damage categories, such as Autonomy Infringement. He proposes to measure social impacts in terms of a reduction of well-being quantified in Quality Adjusted Life Years. In his paper, Weidema (2006) does not describe a SLCA method as such but strives to build impact pathways, or at least, demonstrates how these models may be elaborated, despite the fact that there is no consensus on social cause–effect relationships (Jorgensen et al. 2008).
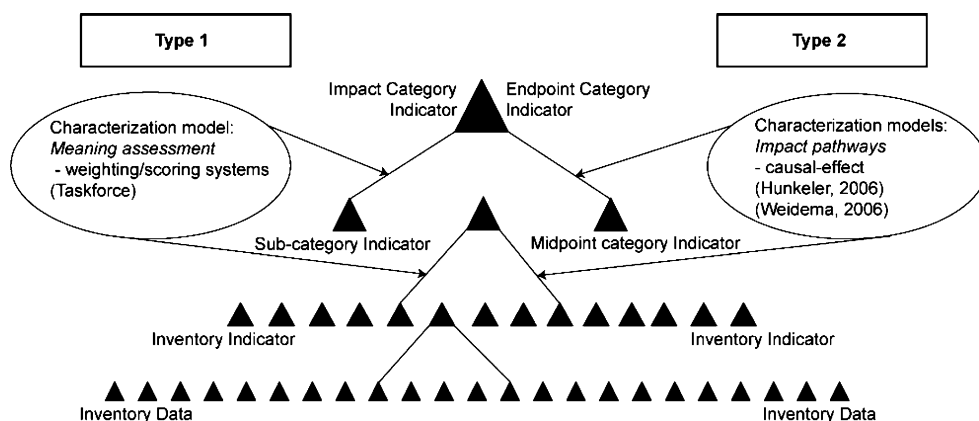
The Types 1 and 2 sLCIA, according to the specifications made above, are illustrated with Fig. 1.

In summary, in the Guidelines, the distinction between Types 1 and 2 is based on the issues of interest covered: the impact categories. However, the characterization models used to assess the impact categories seems to be the fundamental difference between the two. In Type 1, the inventory indicators (e.g., wage per hours of work) will be aggregated following a scoring and weighting system which will seek to represent international consensus using Performance Reference Points. Since the impact categories may represent broad issues of interest, subcategories are used as an intermediary step between the data collected and the Impact Category (e.g., the impact category "Work Conditions" will be first assessed through the subcategories "Fair Salary," "Discrimination," etc.) This approach is put forward by the Taskforce's "meaning assessment." In Type 2, the impact is assessed according to the use of impact pathways, where the inventory indicator is translated into a midpoint indicator and, potentially, into an endpoint indicator, i.e., Hunkeler and Weidema. If impact pathways may use thresholds in order to measure an impact from the inventory data, it is different from Performance Reference Points. The latter are not used in a characterization model allowing the translation of inventory indicators into impacts but are used to compare the inventory indicators with a performance expected to be from an international consensus.

3 The indicator results

Another important distinction can be made between Types 1 and 2 sLCIA, which will significantly influence the out-

Fig. 1 Comparison between Types 1 and 2 (adapted from UNEP 2009)

comes of the analysis. This difference lies in the indicator results, which can be a measure either of a social impact or of the state of a dimension of the social context. The Type 1 sLCIA does not use impact pathways that would allow the evaluation of the effect of a stressor on a stakeholder or an "area of concern." Instead, the Performance Reference Points are used to evaluate a "performance" which gives an indication about the state of a dimension of the social contexts found along the life cycle. In Type 2, with the use of impact pathways to measure impacts derived from the inventory data, it is really "social impacts" that are assessed. For both cases, the Guidelines propose to keep the wording "impact" stressing that "the term social impact is used in a broad manner encompassing the notions of effects, consequences, social change processes and presence of social attribute" (UNEP 2009: 69, footnote 48). Despite this justification, and in line with the definition of "social impact assessment" where it is "the social consequences of" that are assessed (Vanclay 2003), we stress that it is more accurate to talk about "social performance" instead of "social impact," when using Type 1 sLCIA.

Aside from the distinction made between the two types of characterization models, the three methods analyzed here can differ according to the sources of the stressors they are assessing and the way the results of the assessment are linked to the product system.

4 The sources of stressors of the sLCIA

LCA is described as a method that assesses the environmental impacts of products. The environmental impacts of a product assessed in LCA are those created in the ecosphere by the different unit processes involved in the product system for this system to provide the desired function. In LCA, the environmental impact is attributed to the nature of the processes (Jorgensen et al. 2008). The function of the product, described though the functional unit, is the object of LCA. In order to assess the product function's environmental impacts, the functional unit is translated into

a series of unit processes necessary to provide the function. These unit processes are the sources of the stressors (elementary flows) that will induce the impacts.

In contrast to LCA, and as highlighted by Jorgensen et al. (2008), some authors directly argue that social impacts are mostly induced by companies' behavior much more than from the technical nature of the processes themselves (Spillemaeckers and Vanhoutte 2006; Dreyer et al. 2006). Others implicitly propose indicators derived from corporate social responsibility initiatives (e.g., Gauthier 2005) suggesting that it is the organization's behavior that are assessed. The fact that some issues might be more behavior related than process related may also be relevant to the LCA field since, and as pointed out by Kloepffer (2008), the choice between different technologies (which relies on management) might influence the environmental burdens of the unit processes, which stressors rely on the technical nature versus the ones that rely on the organizational context of the process could be seen as being on a continuum instead of distinct categories. Despite this assertion, we strive to determine which of the three examples of sLCIA methods—Taskforce, Hunkeler (2006), and Weidema (2006)—lean more towards the process or the organization as the sources of the stressors.

For Hunkeler (2006), the only stressor used is the working hours. Despite the fact that the working hours can be influenced by management choices, there is a technical link between the process and the time required by the working force to deliver the output. This is emphasized by the fact that the author derives the working hours directly from the output of the unit processes without looking at the organizational level. Therefore, the sources of stressors in Hunkeler's (2006) method are the unit processes, which are in the technosphere, with impacts on the society, which is in the sociosphere.[5]

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[5] The sociosphere refers herein to the social pillar of the three pillars of sustainable development. If LCA assesses the impacts occurring in the environmental sphere, the SLCA assesses the sociosphere through different stakeholders and issues of concern.

The UNEP/SETAC Taskforce's indicators, which are available on the Life Cycle Initiative website[6], assess the social context surrounding the unit processes. Some "generic" indicators look at the average social conditions of the region and the sector, as it is proposed in the Guidelines when saying "the generic analysis gives an overview of the social problems in the area (country, region)" (UNEP 2009: 60). Without specifying the social agents responsible for the social conditions observable at the regional and sectoral level, it is clear that the sources of the stressors are not of a technical nature but, instead, of an organizational nature and therefore belong to the sociosphere. Other indicators clearly assess the enterprises, as some are explicitly related to the management practices. So, the Taskforce's sLCIA looks at social stressors created in the sociophere and potentially affecting the sociosphere. The levels at which the assessment may take place—country, sector, enterprise, etc.—are the level of the sources of the stressors. To make a parallel with the unit process, we will define these different levels as "context unit," which can be linked together by different types of flows (material, money, etc.).

Finally, the inventory indicators of Weidema (2006) are expressed per unit of output and, therefore, seem to belong to the technical nature of the processes. However, using inventory items, such as hours of child labor, raises the question regarding the origins of the stressors. Is child labor a stressor related to the technical nature of the process or to its organizational nature (e.g., a cultural feature of a community, a company choice, etc.)? This evokes the fact that "most impacts on people will be independent of the physical conditions of an industrial process, with the exception of some direct occupational health impacts on workers" (Dreyer et al. 2006), which are considered in LCA. Despite the fact that Weidema (2006) has not elaborated on this issue, we suggest that the source of stressors of his method are in the sociosphere, even if it keeps the "level" of the unit process to express it.

5 Relation between indicator results and the product system

The last distinction between the sLCIA methods highlighted in this paper is the approaches used to link the indicator results to the product system. In LCA, the elementary flows are proportional to the functional unit and are directly used—in this proportionate form—in the characterization model, resulting in indicator values themselves proportional to the functional unit. It is the same for the indicators of Hunkeler

(2006) and Weidema (2006), which are calculated from inventory data that are proportional to the processes output and, therefore, the functional unit. The use of quantitative causal–effect chain—Type 2—allows the carrying of the quantitative link between the inventory data to the functional unit over the impact pathway.

In Type 1 sLCIA, the indicators give a relative position compared to a Performance Reference Point. The elementary flows (stressors) are not in the form of "unit per output" since the Performance Reference Points are not—the elementary flow needs to be in the same unit as the reference point to allow the comparison. Even if the elementary flows would be in a "unit per output" form, they are not used in the characterization model carrying the quantitative link with the functional unit all the way through to the indicator result. Therefore, the link with the functional unit is lost and the indicator result does not represent the functional unit's burden *per se*.

The indicator results that are not expressed per functional unit will, however, be weighted by the relative importance of the context unit. This relative importance will be assigned according to an activity variable, which can be the working hours involved at each context unit, the monetary value added by each context unit, etc. The activity variable assigns a share factor to the indicator results. This inventory data is not used directly to calculate an impact through a characterization model but allows the identification of a weight for each context unit according to a specified activity variable. This activity variable, or the "relevant activity flow" as proposed by Andrews et al. (2009), is proportional to the context unit's output and, therefore, to the functional unit. This is the foundation of the Life Cycle Attribute Assessment (LCAA), which assesses the percentage of a product system possessing different attributes (e.g., organic certification) (Norris 2006; Andrews et al. 2009). The quantitative link to the functional unit is lost but the sLCIA results are representative of the product system "share" in terms of the activity variable. Dreyer et al. (2006) propose the same with the use of a share factor to "represent the weight that is given to a company's social profile in the aggregation of social impacts along the product chain, reflecting that company's importance in the overall life cycle." (Dreyer et al. 2006)

From the discussion above, two methods to express the indicator results proportionally to the product system in SLCA have been identified: (1) referring the elementary flows to the output of each process or sector (when using I–O), as in LCA; and (2) using a relevant activity variable to assign an importance to each unit context relatively to the product system, as in LCAA. In the first method, the weights of the different processes are implicitly carried

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through the impact pathway allowing the indicator result to represent the impact of the functional unit, of a quantitative amount of the studied product. In the second method, the relative weights of the different context units are used as a share factor, which allow the representation of the relative importance of each context unit on the product system.

6 SLCIA outcomes

Table 1 summarizes the distinctions made between the different sLCIA methods according to the indicator results, the sources of stressors and the link between the sLCIA results, and the product system.

According to these distinctions, what are the sLCIA method outcomes? Primary, a "social performance" and a "social impact" are clearly distinct outcomes. A second difference in the outcomes stems from the sources of stressors assessed; is the decision maker more interested in social aspects raised by the technical nature or the organizational nature of the product? Finally, the difference in the outcomes regarding the way the indicator results are linked to the product system is less clear. A question that can be raised: "is the quantitative relation between the indicator result and the functional unit of the product the only way to allow the representation of the product function's social aspects?" Although important, this question is beyond the scope of this article.

According to the specifications made in this paper, Type 1 sLCIA assesses the social performance of the context units of the life cycle of the product. Type 1 shows many convergences to Life Cycle Attribute Assessment, but the presence or not of an attribute is replaced by the evaluation of the social performance. Therefore, we suggest that Type 1 sLCIA uses the expression "performance assessment" instead of "meaning assessment."

The outcomes of Type 2 sLCIA are social impacts. In the case of Hunkeler (2006), the social impacts are created by the technical nature of the processes involved

in the product life cycle. In the case of Weidema (2006), it would be the impact created by the social context surrounding the processes but related back to the process level.

7 Conclusions

In this article, we made an analysis of the sLCIA methods covered by the Guidelines (UNEP 2009). We established that Type 1 sLCIA uses Performance Reference Points allowing the evaluation of the relative position of the state of a dimension of a context unit in reference to an international consensus. The outcomes of the performance assessment are the social performances found along the life cycle, at different organizational levels—the context units. It does, however, not represent the social burdens of a quantified amount of product—the reference flow.

Type 2, closer to LCA, assesses the social impacts derived from the technical nature of the processes, as in Hunkeler (2006), or derived from the sociosphere surrounding the processes, as suggested for Weidema (2006). To date, few social issues are handled using impact pathways. However, the potential assessment of a broader set of social aspects using quantitative measurement, as proposed by Weidema (2006), could allow the assessment of social aspects quantitatively related to the functional unit.

As highlighted by Kloepffer (2008), the set of qualitative social indicators is larger than the set of quantitative ones. Choosing between the feasibility of deriving social impacts from social variables through impact pathways or assessing a broader set of social issues through the use of semiquantitative indicators is still an ongoing issue and requires further research in a medium and long-term perspective. In the shorter term, the choice of sLCIA methods is constrained by the early state of development of the characterization models and the indicators (UNEP 2009).

Table 1 Synthesis of the sources of stressors, the indicators result, and the link between the indicator's results and the product system for the sLCIA methods covered in the Guidelines

	Type 1	Type 2	
	Taskforce (presented in UNEP 2009)	Method of Hunkeler (2006)	Method of Weidema (2006)
Indicators result	Social performances	Social impacts	Social impacts
Source of stressors	Sociosphere (Context unit)	Techonosphere (Unit process)	Sociosphere (Unit process)
Link to the product system	Relative importance of each context unit over all the product system	Functional unit	Functional unit

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